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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,356	02/13/2002	Eric Juntwait		8882

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WEI TE CHUNG  
FOXCONN INTERNATIONAL, INC.  
1650 MEMOREX DRIVE  
SANTA CLARA, CA 95050

EXAMINER

PATEL, ISHWARBHAI B

ART UNIT PAPER NUMBER

2827

DATE MAILED: 11/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/075,356	JUNTWAIT ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ishwar (I. B.) Patel	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 3, 7 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-6, 8-13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment filed on July 24, 2003, amending specification and figures have been considered but it is still not overcoming the deficiencies indicated in the previous action.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the connection of the medial traces 5 connected to a chosen pair (T3, R3), page 5, paragraph 0020, line 1 and 2, of the response and as described in the specification, paragraph 0020, line 1 and 2.

As seen in figure 1, the footprints T3 and R3 with respective vias are not connected to any of the internal traces or internal foot prints.

Foot prints T1, R1, R2 and T4 are clearly showing the connection with respective via to the internal traces C1, C1', C4, and C4', but the connection of via connected with foot print T3 and R3 and that of T2 and R2 are not clearly shown in the figures, as a result it is not possible to properly understand the invention. The dotted loop in the center of all the three figures, figure 1, figure 4 and figure 6 are unclear to read along with the respective description.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The cross hatching pattern in newly submitted figures are acceptable.

### ***Specification***

The disclosure is objected to under 37 CFR 1.71, as being so incomprehensible to read the claims in light of the disclosure and to apply a prior art by the examiner. For example, the following items are not understood: The connection of foot print T2, T3, R3 and R2, along with the traces C3, C3', C2 and C2', as shown in figure 1 is unclear and as a result the inner foot print as shown by the loop around the foot print T2, T3, R3 and R2 is not properly understood with related description. As seen in figure 1, the footprints T3 and R3 with respective vias are not connected to any of the internal traces or internal foot prints. Similarly the identical details shown with respect to figure 4 and 6 are also unclear.

Applicant is required to submit an amendment, which clarifies the disclosure so that the examiner may make a proper comparison of the invention with the prior art.

Applicant should be careful not to introduce any new matter into the disclosure (i.e., matter which is not supported by the disclosure as originally filed).

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The chosen pair of foot print and the relocated foot print and the foot print on the internal layer, as claimed in all the independent / dependent claims, claims 1, 11, 12, 17, 18, 19 and 20 are not properly disclosed not understood from the figures, figure 1, 4 and 6 and the related description, as explained in the drawing rejection and specification rejection. It is unknown where the footprints are, how they are configured, how they are connected into the internal layers of the substrate and how the device works.

The dependent claims inherently inherit the deficiencies from the respective independent claims.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-20 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The chosen pair of foot print or the relocated foot print or the foot print on the internal layer, as claimed in all the independent / dependent claims, claims 1, 11, 12, 17, 18, 19 and 20 is unclear, as is not clear in the figures, figure 1, 4 and 6 and the related description, as explained in the drawing rejection and specification rejection.

The dependent claims inherently inherit the deficiencies from the respective independent claims.

Further, regarding claim 1,

(a) "said first set of footprints being paired as the conductors in the electrical device while at least two unpaired conductors, the first and second conductor, are closely spaced from and cross talked with each other" is unclear. The footprints are just the connection lands or pads on a circuit board. Structurally, paired footprints are not different than any other footprints. They can be used for the connections. Paired or unpaired footprints are the intended use of the foot print structure.

(b) "a second set of conductive footprints each being located on an area of **another in insulated layers** aligned with and spaced from one footprint of the first set and connected to another footprint of the first set" is unclear.

"another insulated layers" used in the first paragraph as shown in bold letters above, is unclear. It is not clear whether the applicant is claim other than the two insulated layers referred to above or one of those said two layers. Further,

it is unclear how second set second of footprint is connected to one of the footprint of the first set. Furthermore,

it is unclear what is claimed by "said one footprint of the first set is connected with the first conductor, and said another footprint of the first set is connected with a third conductor which is of same pair as the second conductor". It is confusing to find the relation of first, second and third conductor and how they are connected.

Regarding claim 11 and 12,

(a) "every two of said footprints being a signal-based pair when every footprints are electrically connected with a corresponding conductor from an electrical device" is unclear. This is a structural claim, and structurally the signal-based pair of footprints is not different than any other footprint. The signal-based footprint is an intended use of the footprint for any specific application.

(b) "each trace connected to a first chosen pair of footprints is relocated to have portion of them pass through an area of the intermediate layer vertically spaced from the location of one footprint of a second chosen pair on the outer face of the substrate and an expanded conductive footprint is formed over there to couple with the footprint it faces" is unclear.

It is unclear what are "a first chosen pair of footprints" and "a second chosen pair of foot prints" and "an expanded conductive footprint formed on the other layer".

Similarly regarding independent claims 17, 18, 19 and 20, as applied to claims 1 and 11 above, the these are the structural claims and the chosen pairs or first and second pairs are the intended use of the structure, and further the location and structure of the internal foot print and there internal connection is unclear.

The dependent claims 2-10 and 12-16, inherit those deficiencies from their respective independent claims.

Furthermore,

Regarding claim 10, the applicant is claiming all the necessary electronic components of the connector including conditioning component and terminal module are solderable on the printed circuit board, but those components are not exclusively claimed. Claim 10 depends on claim 1 and claim 1 is printed circuit board.

Regarding claims 8 and 12, it is not clear what is expanding size of the footprints.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



8. Claims 1-20, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashim, US Patent No. 6,107,578, and further in view of Winings, US Patent No. 6,250,968.

Regarding claim 1, Hashim discloses a noise reduced printed circuit board comprising:

a substrate having at least two insulated layers for mounting conductive material; a first set of conductive footprints being mounted on one of the insulated layers, each footprint of said first set being accessible from outside of the substrate and electrically connectable with a conductor extending from an electrical device (circuit board 14 with conductive path T1 - R1, T3 - R3, and T5 - R5 on top of layer 16, see figure 1 and 2, column 3, line 13-25); and

a second set of conductive footprints each being located on an area of another insulated layers aligned with and spaced from one footprint of the first set (circuit board 14 with conductive path T2 - R2, and T4 - R4, on top of another layer 16, see figure 1 and 3, column 3, line 13-25), but

fails to disclose the interconnection of one foot print to another of different pair of footprint.

Wining discloses alternating the trace connection in the internal layers, see figure 5.

A person of ordinary skill in the art will route traces and the connection of the traces depending upon the desired control of the cross talk between the adjacent conductors.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the applicant's invention to route the traces connecting the foot print of Hashim, as claimed, from the teachings of Wining, in order to have desired control of the cross talk between the adjacent conductor.

Regarding claim 11 and 12, the combination of Hashim and Wining discloses all the features of the claimed invention including the plurality of footprint as applied to claim 1 above.

Regarding claim 2, the combination of Hashim and Wining further discloses at least two conductive footprints of the second set are located on different insulated layers, see Hashim figure 1.

Regarding claim 4-6, 13 and 16 the combination of Hashim and Wining further discloses footprints of the first set totally vertically aligned with their corresponding aligned footprints of the second set, and each foot print of the second set has the same size as its corresponding aligned footprint of the first set, figure 3.

Regarding claim 8, though the combination of Hashim and Wining does not disclose the larger size footprints.

The foot print size will be decided based on the connection requirement for the proper electrical connection with the components.

A person of ordinary skill in the art will decide the size based on the component / connector to be connected with the board for the specific application.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the combination board of Hashim and Wining with the second foot print larger than the first set of foot print in order to have desired electrical connection.

Regarding claim 9 and 10, the combination of Hashim and Wining further discloses the printed circuit board with a solderably conductive pad, copper (which is solderable) conductive path on insulated layer 16, see figure 1 and 2, column 2, line 39-60.

Regarding claim 15, the combination of Hashim and Wining further discloses the substrate has at least two different intermediate layers and at least one conductive trace portion extends along every intermediate layer, Hashim figure 4.

Regarding claims 17, the combination of Hashim and Wining discloses all the features of the claimed invention as applied to claim 1 above, except explicitly disclosing the electronic component mounted on the board. However the circuit board is designed to reduce the cross talk between the components mounted on it.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention to construe the circuit board of the combination of Hashim and Wining to have the component mounted on it.

Regarding claims 18, the combination of Hashim and Wining discloses all the features of the claimed invention including the plurality of footprints mounted on an insulated layer of a substrate as applied to claim 1 above.

Regarding claims 19, the combination of Hashim and Wining discloses all the features of the claimed invention including the conductive traces with first, second and third section as applied to claim 1 above, see Hashim figure 2.

Regarding claims 20, the combination of Hashim and Wining discloses all the features of the claimed invention including more than two layers as applied to claim 1 above, see Wining figure 4, six conductive layers.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Scheer discloses a shielded connector assembly including a printed circuit board.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308 1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0658.

*IBP*  
ibp  
11/07/03

*[Signature]*  
KAMAND CUNEO  
SUPERVISOR  
ART UNIT 2827  
703-308-1233